



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/671,555	09/29/2003	Vincenzo Salvatore Marrella	D-21377	4277
27182	7590	10/17/2006		
PRAXAIR, INC. LAW DEPARTMENT - M1 557 39 OLD RIDGEBURY ROAD DANBURY, CT 06810-5113			EXAMINER WARTALOWICZ, PAUL A	
			ART UNIT	PAPER NUMBER
			1754	

DATE MAILED: 10/17/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	Application No. 10/671,555	Applicant(s) MARRELLA ET AL.	
	Examiner Paul A. Wartalowicz	Art Unit 1754	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 02 August 2006.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-8 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-8 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 29 September 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                       | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

## **DETAILED ACTION**

### ***Response to Arguments***

Applicant's arguments filed August 2, 2006 have been fully considered but they are not persuasive.

Applicant argues that there is no combined superheated steam stream, formed by combining the contaminated superheated steam stream with the second part of the uncontaminated superheated steam stream, that is combined with the hydrocarbon containing feed stream to form the hydrocarbon steam containing process stream as a feed to the steam reformer. This argument is not persuasive for the following reasons.

There is a stream that comprises the uncontaminated steam, contaminated steam, and the hydrocarbon stream. Schunck teaches that it is known to combine steam and a hydrocarbon stream to form a feed to a reactor (page 1, lines 81-85), even though Schunck teaches that the hydrocarbon stream with a contaminated steam stream which is then combined with a uncontaminated steam stream. There is no patentable distinction between the claimed invention and Schunck. The stream entering the steam reformer in the claimed invention comprises uncontaminated steam, contaminated steam, and a hydrocarbon stream; Schunck teaches a stream entering the reactor (3) comprising an uncontaminated steam, a contaminated steam, and a hydrocarbon stream. Because the resultant stream entering the reactor of the claimed invention is substantially similar to that of the resultant stream entering the reactor of the prior art, a patentable difference between the prior art of record and the invention as claimed has not been established.

Applicant argues that in Schunck, heat is transferred from the first part of an uncontaminated superheated steam stream to a saturated hydrocarbon stream in a heat exchanger and that if such saturated hydrocarbon stream after having been heated were to be considered the superheated contaminated steam stream, there is no combined superheated steam stream that is ever combined with the hydrocarbon containing stream given that the second uncontaminated superheated stream is the next stream in Schunck that is combined to for the feed to the steam reformer. This argument is not persuasive for the following reasons.

The stream flowing from the moistener column to the reactor comprising hydrocarbon and contaminated steam is combined with an uncontaminated stream stream thus forming a combined superheated stream combined with a hydrocarbon stream (page 1, line 125-page 2, line 5; page 1, lines 105-115). The stream leaving the top of the moistener column is not only the superheated contaminated stream, but is the combination of the superheated contaminated stream and the hydrocarbon stream.

Applicant argues that the uncontaminated condensate is re-circulated to the steam reforming system as make up and that it has never been contaminated given that it has been formed by condensing a first part of the uncontaminated superheated steam stream for heat transfer to the contaminated condensate stream. This argument is not persuasive for the following reasons.

Roensch teaches a process for stripping volatile contaminants from ammonia plant process condensate (col. 2, lines 43-46) wherein stripped condensate is pumped for the purpose of transferring the condensate to other operating units where high quality water is advantageous (col. 3, lines 5-8). The limitation that Roensch is relied upon pertains to pressurizing the *contaminated* condensate stream. Schunck teaches that the uncontaminated condensate is recirculated to the steam reforming system as make-up; Roensch is not relied upon to teach that limitation. In response to applicant's arguments against the references individually, one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.*, 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986).

Applicant argues that although Roensch teaches stripping to dissolve gases out of the process condensate stream in a stripping column and then pumping the stream, the resultant column bottoms is still contaminated and could not be used in Roensch for combination with clean well water because it would still constitute the contaminated process condensate stream. This argument is not persuasive for the following reasons.

Roensch teaches that the stripping tower is equipped with a collection basin (col. 3, lines 5-7) for the purpose of pumping the stripped condensate to other operating units where high quality water is advantageous (col. 3, lines 5-8). The teaching of pumping the stripped condensate to other operating units where high quality water is advantageous provides the motivation to modify *Schunck* with Roensch. The

Art Unit: 1754

combination of Schunck with Roensch does not necessitate that Schunck modifies *Roensch*. In response to applicant's argument that the resultant column bottoms is still contaminated and could not be used in Roensch for combination with clean well water because it would still constitute the contaminated process condensate stream, the fact that applicant has recognized another advantage which would flow naturally from following the suggestion of the prior art cannot be the basis for patentability when the differences would otherwise be obvious. See *Ex parte Obiaya*, 227 USPQ 58, 60 (Bd. Pat. App. & Inter. 1985).

Applicant argues that the teachings of Wasala are contrary to the teachings of Applicants' invention in which it is the contaminated process stream that is in fact utilized as a feed to the steam reformer rather than a purified stream. This argument is not persuasive for the following reasons.

While Wasala does teach a process wherein process condensate is purified of contaminants by stripping the process condensate with a process stream before it is used in a chemical process; this teaching is not contrary to the teaching of the claimed invention. The process in the prior art (wherein process condensate is purified of contaminants by stripping the process condensate with a process stream before it is used in a chemical process) is substantially similar to that of the claimed invention as recited: "stripping dissolved gasses out of the at least one process condensate stream in a stripping column and collecting the condensate as a column bottoms of the stripping column" (claim 2).

Applicant argues that Wasala has no bearing on the patentability of claim 8 given the fact that reported process condensate does not combine in Wasala with a process condensate stream produced from the reformer and that there is no mention that the process condensate is imported from a hydrogen or other synthesis gas plant in column 2, lines 47-50 and that there is no combination of two sources of the process stream as recited in claim 8. This argument is not persuasive for the following reasons.

Wasala is not relied upon to teach that the process condensate and an external condensate are combined. In response to applicant's arguments against the references individually, one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.*, 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986). Wasala is relied upon to teach that it is obvious to use an external process condensate; this does *not* exclude the process condensate taught by Schunck. It is obvious to one of ordinary skill in the art to use the external condensate because doing so would help meet steam requirements for the process and that this teaching combined with Schunck meets the limitation as claimed.

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Claims 1, 2, 4, and 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Schunck (G.B. 2006814) in view of Wasala et al. (U.S. 4193776) and Roensch (U.S. 4464228).

Schunck teaches a process for recycling a process stream condensate from a steam reforming system that produces an uncontaminated superheated steam stream (steam generator 4 produces uncontaminated steam, page 1, lines 118-122) and at least one process condensate stream contaminated with products of a steam reformer of the steam reforming system (page 1, lines 120-124) comprising collecting condensate from the at least one process condensate stream and forming a contaminated condensate stream therefrom (page 1, lines 120-124), transferring heat



Art Unit: 1754

from a first part of the uncontaminated superheated steam stream to the contaminated condensate stream in three stages in which the condensate is first heated at heat exchanger 16 (this constitutes pre-heating, page 2, lines 24-27), then heating in steam-heated circulation unit 11 (this constitutes a boiler stage, page 1, lines 125-129), then finally heating the condensate with heat-exchanger 17 before entering reactor 3 (this constitutes the final process steam super-heater stage, page 2, lines 31-35; page 1, lines 115-120) thereby to form an uncontaminated condensate stream (steam condensate flows from steam-heat circulation unit to degasser as steam condensate, page 2, lines 26-31), combining a second part of the uncontaminated super-heated steam stream with the contaminated superheated steam stream to form a combined superheated steam stream (heated condensate flowing from the molstener column 9 to heat-exchanger 17 and then to reactor 3 is combined with part of the uncontaminated steam before entering reactor 3, page 1, lines 115-120; page 2, lines 30-35), recycling the uncontaminated condensate stream to the steam reforming system as make up for the uncontaminated superheated steam stream (steam condensate leaving steam-heated circulation unit 11 is fed to degasser 7 to be transformed to steam in steam generator 4, page 2, lines 29-31; page 1, lines 118-122). Schunck fails to teach wherein pressurizing the contaminated condensate stream and wherein using at least part of the combined superheated steam stream to form a hydrocarbon and steam containing process stream as a feed to the steam reformer and wherein collecting condensate from an external process condensate stream produced externally to the steam reformer and forming the contaminated condensate stream from the external

Art Unit: 1754

process condensate stream and the at least one process condensate stream and wherein stripping dissolved gases out of the at least one process condensate stream in a stripping column and collecting the condensate as a column bottoms of the stripping column.

As to the limitation wherein pressurizing the contaminated condensate stream, Roensch teaches a process for stripping volatile contaminants from ammonia plant process condensate (col. 2, lines 43-46) wherein stripped condensate is pumped for the purpose of transferring the condensate to other operating units where high quality water is advantageous (col. 3, lines 5-8).

Therefore, it would have been obvious to one of ordinary skill in the art at the time applicant's invention was made to provide wherein stripped condensate is pumped in Schunck in order to transfer the condensate to other operating units where high quality water is advantageous (col. 3, lines 5-8) as taught by Roensch.

As to the limitation wherein collecting condensate from an external process condensate stream produced externally to the steam reformer and forming the contaminated condensate stream from the external process condensate stream and the at least one process condensate stream, Wasala et al., however, teach a process for purification of process condensate (col. 1, lines 5-10) wherein process condensate is imported from a hydrogen or other synthesis gas plant (col. 2, lines 47-50) for the purpose of purifying the process condensate in a stripping tower (col. 3, lines 33-36).

Therefore, it would have been obvious to one of ordinary skill in the art at the time applicant's invention was made to provide wherein process condensate is imported

Art Unit: 1754

from a hydrogen or other synthesis gas plant (col. 2, lines 47-50) in Schunck in order to purify the process condensate in a stripping tower (col. 3, lines 33-36) as taught by Wasala et al.

As to the limitation wherein using at least part of the combined superheated steam stream to form a hydrocarbon and steam containing process stream as a feed to the steam reformer, Schunck teaches that it is known to combine steam and a hydrocarbon stream to form a feed to a reactor (page 1, lines 81-85).

Therefore, it would be obvious to one of ordinary skill in the art at the time applicant's invention was made to provide wherein using at least part of the combined superheated steam stream to form a hydrocarbon and steam containing process stream as a feed to the steam reformer by the reasoned explanation that it is known to combine steam with a hydrocarbon stream to form a feed to a reactor (page 1, lines 81-85) as taught by Schunck.

Because the feed to the reformer in the prior art of record is substantially similar to that of the feed to the reformer in the claimed invention, there is substantially no patentable difference between the prior art of record and the invention as claimed.

As to the limitation wherein stripping dissolved gases out of the at least one process condensate stream in a stripping column and collecting the condensate as a column bottoms of the stripping column, Roensch, however, teaches a process for stripping volatile contaminants from ammonia plant process condensate (col. 2, lines 43-46) wherein the stripping tower is equipped with a collection basin (col. 3, lines 5-7)

Art Unit: 1754

for the purpose of pumping the stripped condensate to other operating units where high quality water is advantageous (col. 3, lines 5-8).

Therefore, it would have been obvious to one of ordinary skill in the art at the time applicant's invention was made to provide the stripping tower is equipped with a collection basin (col. 3, lines 5-7) in Schunck in order to pump the stripped condensate to other operating units where high quality water is advantageous (col. 3, lines 5-8) as taught by Roensch.

Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Schunck (G.B. 2006814) in view of Wasala et al. (U.S. 4193776) and Roensch (U.S. 4464228) and Tegge et al. (U.S. 3642731).

Schunck teach a process for recycling a process stream condensate as described above in claim 1. Schunck fails to teach wherein the process condensate is collected in a collection drum.

Tegge et al., however, teach a process for the production of polymers (col. 1, lines 30-35) wherein a drum includes a collection portion (col. 8, lines 9-11) for the purpose of collecting immiscible liquid to be withdrawn and pumped (col. 8, lines 10-14).

Therefore, it would have been obvious to one of ordinary skill in the art at the time applicant's invention was made to provide wherein a drum includes a collection portion (col. 8, lines 9-11) in Schunck in order to collect immiscible liquid to be withdrawn and pumped (col. 8, lines 10-14) as taught by Tegge et al.

Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Schunck (G.B. 2006814) in view of Wasala et al. (U.S. 4193776) and Roensch (U.S. 4464228) and Erickson (U.S. 4846240).

Schunck teaches a process for recycling a process stream condensate as described above in claim 1. Schunck fails to teach wherein heat is transferred from the first part of the uncontaminated superheated steam stream to the contaminated condensate stream in a single plate and frame exchanger.

Erickson, however, teaches a process for concentrating aqueous solutions (col. 1, lines 5-7) wherein it is known to use a frame and plate heat exchanger (col. 3, lines 30-31) for the purpose of providing heat exchange between cycle fluids (col. 3, lines 24-26).

Therefore, it would have been obvious to one of ordinary skill in the art at the time applicant's invention was made to provide wherein it is known to use a frame and plate heat exchanger (col. 3, lines 30-31) in Schunck in order to provide heat exchange between cycle fluids (col. 3, lines 24-26).

Claim 6 and 7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Schunck (G.B. 2006814) in view of Wasala et al. (U.S. 4193776) and Roensch (U.S. 4464228) and Erickson (U.S. 4846240) and Dickinson (U.S. 4377066).

Schunck teaches a process for recycling a process stream condensate as described above in claim 1. Schunck fails to teach wherein a third part of the uncontaminated superheated steam stream is exported.

Dickinson, however, teach a process for utilization of heating values of carbonaceous fuels (col. 1, lines 7-10) wherein energy is recycled for the purpose of maximizing exportable heat in the form of super-heated steam (col. 23, lines 59-61).

Therefore, it would have been obvious to one of ordinary skill in the art at the time applicant's invention was made to provide wherein energy is recycled in Schunck in order to maximize exportable heat in the form of super-heated steam (col. 23, lines 59-61) as taught by Dickinson.

Claim 6 and 7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Schunck (G.B. 2006814) in view of Wasala et al. (U.S. 4193776) and Roensch (U.S. 4464228) and Erickson (U.S. 4846240) and Drnevich et al. (U.S. 2003/0110693).

Schunck teaches a process for recycling a process stream condensate as described above in claim 1. Schunck fails to teach wherein a third part of the uncontaminated superheated steam stream is exported.

Drnevich et al. (U.S. 2003/0110693), however, teach a process for a steam methane reformer (paragraph 0047, lines 1-3) wherein it is known to export steam from a steam methane reformer system (paragraph 0049, lines 3-6).

Therefore, it would have been obvious to one of ordinary skill in the art at the time applicant's invention was made to provide wherein it is known to export steam from a steam methane reformer system (paragraph 0049, lines 3-6) in Schunck as disclosed in the similar process of methane reforming as taught by Drnevich et al.

### ***Conclusion***

Art Unit: 1754

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Paul A. Wartalowicz whose telephone number is (571) 272-5957. The examiner can normally be reached on 8:30-6 M-Th and 8:30-5 on Alternate Fridays.

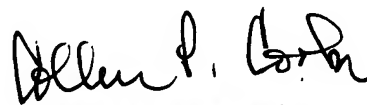
If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stanley Silverman can be reached on (571) 272-1358. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 1754

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



Paul Wartalowicz  
October 12, 2006



**COLLEEN P. COOKE**  
**PRIMARY EXAMINER**